Paper No. 14

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte MARTIN P. DEBRECZENY and MICHAEL P. O'NEIL

Appeal No. 2003-2110
Application No. 09/586,692

ON BRIEF

Before STAAB, FLEMING and BAHR, Administrative Patent Judges.

BAHR, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1-28, which are all of the claims pending in this application.

We AFFIRM-IN-PART.

BACKGROUND

The appellants' invention relates to dual beam Fourier transform infrared (FTIR) methods and interferometers for use in analyte detection in samples of low transmissivity. Appellants' specification (page 7) defines "low transmissivity" as "characterized by high radiation losses, e.g., radiation losses that exceed about 80%, usually at least about 99 and more usually at least about 99.9%."

The examiner relied upon the following prior art references in rejecting the appealed claims:

Mattson et al. (Mattson) 4,999,010 Mar. 12, 1991

Griffiths et al., "Fourier Transform Infrared Spectroscopy," Chapter 8, Vol. 83-1986, pp. 284-310.

The following rejections are before us for review.

Claims 1-10, 12, 13 and 21-28 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Mattson.

Claims 1-13 and 21-28 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Griffiths.

Claims 14-20 stand rejected under 35 U.S.C. § 103 as being unpatentable over Griffiths.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellants regarding the above-noted rejections, we make reference to the final rejection and answer (Paper Nos. 6 and 9) for the examiner's complete reasoning in support of the rejections and to the brief and reply brief (Paper Nos. 8 and 10) for the appellants' arguments thereagainst.

OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellants' specification and claims, to the applied prior art references, and to the respective positions articulated by the appellants and the examiner. As a consequence of our review, we make the determinations which follow.

Each of independent claims 1 and 6 recites a method of determining the concentration of an analyte in a sample of low transmissivity comprising, inter alia, the steps of providing a sample of low transmissivity, producing a sample beam from said sample of low transmissivity and a reference beam from a reference, producing a null signal from the sample and reference beams and deriving the presence of the analyte from the null signal.

There does not appear to be any dispute that Mattson and Griffiths both disclose methods of analyzing the composition of samples using dual beam FTIR spectroscopy comprising the steps of providing a sample, producing a sample beam from said sample and a reference beam from a reference, producing a null signal from the sample and

reference beams and determining the composition of the sample from the null signal. The issue in dispute is whether either reference discloses using a sample of low transmissivity, as defined by appellants,[1] so as to anticipate the subject matter of claims 1 and 6. For the reasons which follow, it is our opinion that neither Mattson nor Griffiths qualifies as an anticipatory[2] reference under 35 U.S.C. § 102. It follows that we shall not sustain the rejection of independent claims 1 and 6, and dependent claims 2-5, 7-10, 12 and 13, as anticipated by Mattson or the rejection of claims 1 and 6, and dependent claims 2-5 and 7-13, as anticipated by Griffiths.

The examiner and appellants agree that Mattson is silent with respect to the transmissivity of the sample placed in sample cell 26b through which the sample beam is passed. Griffiths, on the other hand, specifically addresses samples of low absorptance, which may or may not be highly transmissive, depending upon the

---

[1] As mentioned above, appellants' specification defines "low transmissivity" on page 7 as "characterized by high radiation losses, e.g., radiation losses that exceed about 80%, usually at least about 99 and more usually at least about 99.9%."

[2] Anticipation is established only when a single prior art reference discloses, expressly or under the principles of inherency, each and every element of a claimed invention. RCA Corp. v. Applied Digital Data Sys., Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984). In other words, there must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention. Scripps Clinic & Research Found. v. Genentech Inc., 927 F.2d 1565, 1576, 18 USPQ2d 1001, 1010 (Fed. Cir. 1991). It is not necessary that the reference teach what the subject application teaches, but only that the claim read on something disclosed in the reference, i.e., that all of the limitations in the claim be found in or fully met by the reference. Kalman v. Kimberly Clark Corp., 713 F.2d 760, 772, 218 USPQ 781, 789 (Fed. Cir. 1983), cert. denied, 465 U.S. 1026 (1984).

scattering properties of the sample, but which presumably are highly transmissive in light of the concerns expressed by Griffiths.

The examiner, however, urges that a dual beam nulling interferometric spectrometer as used by Mattson is not limited by the transmissivity of the sample and thus anticipates the full range of transmissivity (answer, page 4). The examiner also points out on pages 8 and 9 of the answer that both Mattson and Griffiths teach that the dual beam interference spectrometer produces an interferogram with a dynamic range far greater than the spectrum of any sample to be measured and argues, in essence, that the spectrum of a sample of any transmissivity can be measured using the dual beam FTIR interferometric techniques used by Mattson and Griffiths, given equation 8.16 of Griffiths.

While we are satisfied that a person skilled in the art at the time of appellants' invention would have been aware that some samples are of high transmissivity and others of low transmissivity, we find nothing in the teachings of either Mattson or Griffiths to support a conclusion that such a person would have at once envisaged samples of low transmissivity[3] for use in the techniques of Mattson and Griffiths. The examiner's conclusion from the teachings of Griffiths that dual beam FTIR

---

[3] Compare In re Petering, 301 F.2d 676, 681, 133 USPQ 275, 280 (CCPA 1962) (in addition to disclosing a generic chemical formula, the prior art reference disclosed preferred substituents from which the court determined that one skilled in the art would have at once envisaged each member of the claimed class of compounds).

interferometry works equally well with samples of low transmissivity and high transmissivity appears speculative at best. Griffiths' teaching on page 300 that "problems, such as detector response going nonlinear at the high radiation flux encountered in optical subtraction requirements, rarely allow the full advantages of the technique to be realized in practice" provides some indication that the disclosed technique may not be suitable for the full range of transmissivity as the examiner suggests. Moreover, even assuming that the dual beam FTIR approach works well for the full range of transmissivity, neither Mattson nor Griffiths gives any indication that its use, rather than the use of single beam FTIR for example, was contemplated for samples of low transmissivity. In this regard, Griffiths points out on pages 299-300 that, in dual beam FTIR spectroscopy, while the weaker is the absorptance of the sample, the smaller is the dynamic range of the ADC required to digitize it, the reverse is true for single beam FTIR spectroscopy, perhaps implying that single beam FTIR spectroscopy is better suited for samples of high absorptance/low transmissivity.

We reach a different conclusion with respect to the rejections of claims 21-28 as being anticipated by Mattson and by Griffiths. The only argued distinction between the systems of Mattson and Griffiths and the subject matter of claims 21-28 is the use of a sample of low transmissivity. Appellants argue that the clause "means for producing a sample beam and a reference beam from said forward and backward beams" in claim 21 necessitates a low transmissivity sample in the system (brief, page 9). The

examiner, on the other hand, asserts that the reference to "a sample of low transmissivity," which occurs only in the preamble of claim 21 in the clause "for use in determining the concentration of an analyte [in] a sample of low transmissivity," constitutes merely intended use (answer, page 8). For the reasons which follow, we agree with the examiner that claim 21 does not require a sample of low transmissivity.

In order to meet a "means-plus-function" limitation under 35 U.S.C. § 112, sixth paragraph, the prior art must (1) perform the identical function recited in the means limitation and (2) perform that function using the structure disclosed in the specification or an equivalent structure. Cf. Carroll Touch Inc. v. Electro Mechanical Sys. Inc., 15 F.3d 1573, 1578, 27 USPQ2d 1836, 1840 (Fed. Cir. 1994); Valmont Indus. Inc. v. Reinke Mfg. Co., 983 F.2d 1039, 1042, 25 USPQ2d 1451, 1454 (Fed. Cir. 1993); Johnston v. IVAC Corp., 885 F.2d 1574, 1580, 12 USPQ2d 1382, 1386 (Fed. Cir. 1989).

The recited function in the "means for producing a sample beam and a reference beam from said forward and backward beams" limitation of claim 21 is "producing a sample beam and a reference beam." This clause does not specify a sample of low transmissivity. The sample compartment 28 of Mattson produces a sample beam 33 and a reference beam 35 from the forward and backward beams. The sample and reference cells of Griffiths likewise produce sample and reference beams from the forward and backward beams. We thus conclude that Mattson and Griffiths each perform the identical function recited in the means-plus-function clause at issue.

To determine whether Mattson and Griffiths perform the function using the structure disclosed in the specification or an equivalent structure, we must first identify the structure disclosed in appellants' specification which performs the function of producing a sample beam and a reference beam. From appellants' disclosure (page 10, lines 27-28; page 13, lines 6-8 and lines 11-13; page 11, line 16), it is apparent that the structure for performing the function of producing a sample beam and a reference beam from the forward and backward beams comprises the reference material 23 and the sample holder 24. Appellants' specification does not appear to characterize the structure for performing this function as including the sample itself. Thus, the sample compartment 28 of Mattson and the sample and reference cells of Griffiths perform the function recited in the means clause using the structure disclosed in appellants' specification (i.e., sample holder and reference material). Moreover, even if the "means for producing a sample beam ..." limitation of claim 21 were interpreted as requiring a sample, in the absence of the recitation of any clear correspondence between the "sample" beam and the "sample of low transmissivity" in the preamble, we find no requirement for a sample of low transmissivity as part of the means-plus-function clause.

As for the reference to "a sample of low transmissivity" in the preamble of claim 21, we agree with the examiner that this is language of intended use. As the systems of both Mattson and Griffiths appear reasonably capable without modification of being used in determining the concentration of an analyte in a sample of low transmissivity, the intended use limitation is fully met by each of Mattson and Griffiths.

In light of the above, we shall sustain the rejections of independent claim 21 as being anticipated by Mattson and Griffiths. Inasmuch as appellants' brief (page 5) states that claims 22-28 stand or fall with claim 21, the rejections of these claims are sustained as well.

We turn finally to the rejection of claims 14-20 as being unpatentable over Griffiths. For the reasons explained above, we find no clear suggestion in either Mattson or Griffiths to use the disclosed dual beam FTIR techniques with samples of low transmissivity, as required in claim 6, from which each of claims 14-20 ultimately depends. Thus, we cannot sustain this rejection.

CONCLUSION

To summarize, the rejection of claims 1-10, 12, 13 and 21-28 as being anticipated by Mattson is reversed as to claims 1-10, 12 and 13 and sustained as to claims 21-28, the rejection of claims 1-13 and 21-28 as being anticipated by Griffiths is

reversed as to claims 1-13 and sustained as to claims 21-28 and the rejection of claims 14-20 as being unpatentable over Griffiths is reversed. The examiner's decision is affirmed-in-part.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

LAWRENCE J. STAAB
Administrative Patent Judge

MICHAEL R. FLEMING
Administrative Patent Judge

JENNIFER D. BAHR
Administrative Patent Judge

) BOARD OF PATENT
) APPEALS
) AND
) INTERFERENCES

JDB/ki

Bret Field
Bozicevic Field & Francis LLP
200 Middlefield Road Suite 200
Menlo Park, CA 94025